In the Claims:

1. (Currently Amended) A method for analyzing the temporal behavior of a system~~a temporal expression~~, the method comprising:

inputting a specification for the temporal behavior of a system in the form of a temporal expression;

parsing the temporal expression to form a hierarchical tree, each node of said hierarchical tree containing a subexpression of the temporal expression;

propagating a sampling event to each node of said hierarchical tree according to at least one *Sampling* rule; ~~and~~

forming a finite state machine by determining each transition from each node of said hierarchical tree to a successor node according to at least one transition *Step* rule to analyze the temporal expression;~~.~~

providing the values of a plurality of variables of said system sampled over a period of time to said finite state machine;

evaluating the resulting state of said finite state machine to ascertain whether the resulting state comprises an error state; and

providing an output indicating verification of a design of said system.

2. (Canceled).

3. (Currently Amended) The method of claim ~~2~~1, wherein said state machine is a deterministic state machine.

4. (Currently Amended) The method of claim 3, ~~further comprising;~~ wherein said ascertaining comprises evaluating the temporal expression with said deterministic state machine.

5. (Currently Amended) The method of claim ~~2~~1, wherein said ~~state machine evaluates a temporal expression for design verification of~~ system is the system of a DUT (device under test).

6. (Currently Amended) The method of claim ~~2~~1, wherein said ~~state machine evaluates temporal expressions for~~ system comprises a concurrent, dynamic system.

7. (Original) The method of claim 6, wherein said concurrent dynamic system is selected from the group consisting of a telephone system, a switching network, and an embedded control software program.

8. (Currently Amended) The method of claim ~~2~~1, wherein the temporal expression includes at least one expression containing at least one repeated subexpression and said state machine is constructed by representing said at least one expression as a finite structure having an unbounded number of counters for representing said at least one repeated sub-expression.

9. (Original) The method of claim 1, wherein said propagating of said sampling event further comprises normalizing said hierarchical tree.

10. (Original) The method of claim 9, wherein normalizing said hierarchical tree includes removing at least one anomalous expression, wherein an anomalous expression is an expression equivalent to epsilon or empty.

11. (Original) The method of claim 10, wherein removing said at least one anomalous expression is performed recursively.

12. (Original) The method of claim 1, wherein the temporal expression is constructed in a temporal language and parsing the temporal expression further comprises translating said temporal language into a plurality of functions, each function featuring an operator selected from a finite set of operators.

13. (Original) The method of claim 1, wherein said hierarchical tree has a root node and at least one leaf, and propagating said sampling event is performed iteratively starting from said root node.

14. (Original) The method of claim 13, wherein propagating said sampling event further comprises creating a new node for attaching said sampling event to said node, wherein said node is a successor node to said new node.

15. (Original) The method of claim 14, wherein creating said new node is performed if said sampling event is repeated at least once.

16. (Original) The method of claim 1, wherein propagating said sampling event further comprises reducing said hierarchical tree.

17. (Original) The method of claim 16, wherein hierarchical tree is reduced according to at least one rule, said rule being applied to said hierarchical tree recursively.

18. (New) A computer-readable storage medium containing a set of instructions for analyzing the temporal behavior of a system, comprising:

a sample provision routine, for providing the values of a plurality of variables of said system sampled over a specified pattern in time;

an expression formation input routine, for forming inputting a temporal expression from said values specifying the temporal behavior of a system;

a parsing routine, for parsing the temporal expression to form a hierarchical tree, each node of said hierarchical tree containing a subexpression of the temporal expression;

a propagation routing, for propagating a sampling event to each node of said hierarchical tree according to at least one *Sampling* rule; and

a transition determination state machine formation routine, for forming a finite state machine by determining each transition from each node of said hierarchical tree to a successor node according to at least one transition *Step* rule to analyze the temporal expression;

a sample provision routine, for providing the values of a plurality of variables of said system sampled over a period of time to said state machine; and

a verification routine, for ascertaining whether said resulted in an error state of said finite state machine;

an output routine, for providing an output indicating verification of a design of said system.